

What is claimed is:

1. A method for automatically adapting to statically varying packet size, the method comprising:

identifying a first boundary;

identifying a second boundary;

determining the statically varying packet size based on the first and second boundaries;

identifying an additional N boundaries based on the determined packet size; and

entering a sync state based on the identification of the additional N boundaries.

2. The method of claim 1, wherein identifying the first boundary comprises calculating a header error check (HEC) value and comparing with a received value.

3. The method of claim 1, wherein determining the statically varying packet size comprises counting the number of bytes between the first and second boundaries.

4. The method of claim 3, and further comprising limiting the counting of bytes after the first boundary to a selected number of bytes.

5. The method of claim 1, wherein identifying an additional N boundaries comprises identifying an additional N boundaries based on a calculated header error check (HEC) value.

6. The method of claim 1, and further comprising returning to the identifying of a first boundary to resynchronize when a selected number of boundary errors are detected following entering the sync state.

7. The method of claim 1, wherein identifying an additional N boundaries comprises identifying additional boundaries based on the determined statically varying packet size.

8. A method for automatically adapting to statically varying packet size, the method comprising:

identifying a first boundary based on a header value;

identifying a second boundary based on a header value;

counting a number of bytes between the first and second boundaries to determine the statically varying packet size;

identifying an additional N boundaries separated by the determined packet size;

entering a sync state based on the identification of the additional N boundaries;

and

tracking boundary errors in the sync state to determine when synchronization is lost.

9. A method for automatically adapting to statically varying packet size, the method comprising:

receiving a stream of bytes over a physical medium;

determining a static packet size from the bytes in the stream of bytes; and

using the determined packet size to process packets from the received byte stream.

10. The method of claim 9, wherein determining a packet size comprises identifying first and second boundaries of a packet based on bytes in the received stream of bytes.

11. The method of claim 10, wherein determining a packet size further comprises counting a number of bytes in the byte stream between the first and second boundaries.

12. The method of claim 10, wherein determining a packet size further comprises identifying N additional boundaries separated by the same number of bytes.

13. The method of claim 9, and further comprising re-determining the packet size after a selected number of errors in the processing of packets.

14. A method for automatically adapting to statically varying packet size, the method comprising:

- identifying a first boundary based on a header error check value;
- counting bytes after the first boundary is identified without exceeding a selected number of bytes;
- identifying a second boundary based on a header error check value;
- determining a number of bytes between the first and second boundaries based on the counted bytes after the first boundary to determine the statically varying packet size;
- identifying an additional N boundaries separated by the determined packet size based on a header error control value;
- entering a sync state based on the identification of the additional N boundaries;
- and
- tracking boundary errors in the sync state to determine when synchronization is lost.

15. A method for automatically adapting to statically varying packet size, the method comprising:

- receiving a stream of bytes;
- identifying an expected packet size based on the received bytes;
- counting N additional packets that match the expected packet size;
- entering a sync state based on receiving the N additional packets;
- monitoring packet size of packets received in the sync state; and
- when M packets vary from the expected packet size, exiting the sync state.

16. The method of claim 15, wherein the N additional packets comprise N consecutive packets.

17. The method of claim 15, wherein the M packets comprise M consecutive packets.

18. The method of claim 15, wherein identifying an expected packet size comprises identifying an expected packet size from consecutive packet boundaries.

19. The method of claim 18, wherein identifying packet boundaries comprises calculating header error check values and comparing the calculated values with a byte of data in the stream of bytes.

20. A communication system, comprising:

- a first packet-based communication device;

- a second packet-based communication device;

- a physical medium, coupled between the first and second packet-based communication devices; and

- a first transmission convergence layer associated with the first packet-based communication device and a second transmission convergence layer associated with the second packet-based communication device, the first and second transmission convergence layers configured to automatically adapt to a statically varying packet size based on packets received at the respective first and second packet-based communication devices.

21. The communication system of claim 20, wherein the first and second transmission convergence layers each include a machine readable medium having instructions stored thereon for a method for automatically adapting to a statically varying packet size comprising:

- receiving a stream of bytes from the physical medium;

- identifying an expected packet size based on the received bytes;

- counting N additional packets that match the expected packet size;

- entering a sync state based on receiving the N additional packets;

- monitoring packet size of packets received in the sync state; and

- when M packets vary from the expected packet size, exiting the sync state.

22. The communication system of claim 21, wherein the N additional packets comprise N consecutive packets.

23. The communication system of claim 21, wherein the M packets comprise M consecutive packets.
24. The communication system of claim 21, wherein identifying an expected packet size comprises identifying an expected packet size from consecutive packet boundaries.
25. The communication system of claim 24, wherein identifying packet boundaries comprises calculating header error check values and comparing the calculated values with a byte of data in the stream of bytes.
26. A machine readable medium having instructions stored thereon for a method for automatically adapting to a statically varying packet size, the method comprising:  
receiving a stream of bytes from the physical medium;  
identifying an expected packet size based on the received bytes;  
counting N additional packets that match the expected packet size;  
entering a sync state based on receiving the N additional packets;  
monitoring packet size of packets received in the sync state; and  
when M packets vary from the expected packet size, exiting the sync state.
27. The machine readable medium of claim 26, wherein the N additional packets comprise N consecutive packets.
28. The machine readable medium of claim 26, wherein the M packets comprise M consecutive packets.
29. The machine readable medium of claim 26, wherein identifying an expected packet size comprises identifying an expected packet size from consecutive packet boundaries.

30. The machine readable medium of claim 29, wherein identifying packet boundaries comprises calculating header error check values and comparing the calculated values with a byte of data in the stream of bytes.

31. A machine readable medium having instructions stored thereon for a method for automatically adapting to statically varying packet size, the method comprising:

receiving a stream of bytes over a physical medium;

determining a static packet size from the bytes in the stream of bytes; and

using the determined packet size to process packets from the received byte stream.

32. The machine readable medium of claim 31, wherein determining a packet size comprises identifying first and second boundaries of a packet based on bytes in the received stream of bytes.

33. The machine readable medium of claim 32, wherein determining a packet size further comprises counting a number of bytes in the byte stream between the first and second boundaries.

34. The machine readable medium of claim 32, wherein determining a packet size further comprises identifying N additional boundaries separated by the same number of bytes.

35. The machine readable medium of claim 31, and further comprising re-determining the packet size after a selected number of errors in the processing of packets.

36. A machine readable medium having instructions stored thereon for a method for automatically adapting to statically varying packet size, the method comprising:

identifying a first boundary;

identifying a second boundary;

detetermining the statically varying packet size based on the first and second boundaries;

identifying an additional N boundaries based on the determined packet size; and  
entering a sync state based on the identification of the additional N boundaries.

37. The machine readable medium of claim 36, wherein identifying the first boundary comprises calculating a header error check (HEC) value and comparing with a received value.

38. The machine readable medium of claim 36, wherein determining the statically varying packet size comprises counting the number of bytes between the first and second boundaries.

39. The machine readable medium of claim 38, and further comprising limiting the counting of bytes after the first boundary to a selected number of bytes.

40. The machine readable medium of claim 36, wherein identifying an additional N boundaries comprises identifying an additional N boundaries based on a calculated header error check (HEC) value.

41. The machine readable medium of claim 36, and further comprising returning to the identifying of a first boundary to resynchronize when a selected number of boundary errors are detected following entering the sync state.

42. The machine readable medium of claim 36, wherein identifying an additional N boundaries comprises identifying additional boundaries based on the determined statically varying packet size.

43. A circuit for automatically adapting to a statically varying packet size, the circuit comprising:

a boundary detection circuit that receives a stream of bytes, the boundary detection circuit adapted to detect a boundary between consecutive packets based on the stream of bytes, and to generate a signal indicating the next boundary;

a packet size calculator, responsive to the stream of bytes, the packet size calculator adapted to calculate and store an expected packet size based on the received bytes and to generate a signal indicating the expected next packet boundary; and

a synchronization circuit, responsive to the signal indicating the next boundary and the signal indicating the expected next boundary, that is adapted to count N consecutive valid boundaries to enter a sync state and to count M consecutive missed boundaries to exit the sync state.

44. The circuit of claim 43, wherein the boundary detection circuit includes:

a shift register that receives and stores X consecutive bytes of data in the data stream;

a calculation circuit, responsive to the data in the shift register, the calculation circuit operative to calculate a header error check (HEC) code based on the data in the shift register; and

a comparator, responsive to the received data bytes and the calculation circuit, that is operative to compare the next data byte with the calculated HEC code to identify a boundary between packets.

45. The circuit of claim 43, wherein the boundary detection circuit uses a calculation of the header error check code to detect boundaries between packets.

46. The circuit of claim 43, wherein the packet size calculator comprises:

a byte counter, responsive to the received stream of data bytes, the byte counter adapted to count the number of bytes between packet boundaries;

a byte count store, responsive to the byte counter, that is adapted to hold a value of the byte counter after two consecutive boundaries are identified; and



a comparator, responsive to the byte counter and the byte count store, that is adapted to compare the next byte count with the held value so as to produce the signal indicating expected next packet boundary.

47. The circuit of claim 43, wherein the synchronization circuit comprises:

a logic circuit, responsive to the signal indicating the next boundary of the boundary detection circuit and the signal indicating the expected next packet boundary of the packet size calculator;

a good boundary counter, responsive to an output of the logic circuit, that is adapted to count the number of times the expected and actual packet boundaries coincide;

a comparator, responsive to the good boundary counter, that is adapted to place the synchronization circuit in a sync state when the good boundary counter indicates that N boundaries have matched the expected boundaries;

a bad boundary counter, responsive to an output of the logic circuit, that is adapted to count the number of times the expected and actual packet boundaries do not coincide after entering the sync state; and

a comparator, responsive to the bad boundary counter, that is adapted to place the synchronization circuit in an unsynchronized state when the bad boundary counter indicates M boundaries did not match the expected boundaries.